UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,460	06/26/2003	Nayan H. Joshi	ATOTP0104US	3492

7590 11/19/2007

Armand P. Boisselle
Renner, Otto, Boisselle & Sklar, LLP
Nineteenth Floor
1621 Euclid Avenue
Cleveland, OH 44115

EXAMINER	
BAREFORD, KATHERINE A	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
11/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/606,460	JOSHI ET AL.	
	Examiner	Art Unit	
	Katherine A. Bareford	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-97* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-31,36-42,50,51,55,57-62,66,69-71,73-82,84,85,87-91 and 93-97* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 1-27, 32-35, 43-49, 52-54, 56, 63-65, 67, 68, 72, 83, 86 and 92 are cancelled

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment of October 9, 2007 has been receive and entered. With the amendment, claims 1-27, 32-35, 43-49, 52-54, 56, 63-65, 67, 68, 72, 83, 86 and 92 are canceled and claims 28-31, 36-42, 50-51, 55, 57-62, 66, 69-71, 73-82, 84, 85, 87-91 and 93-97 (including new claims 94-97) are pending for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 28, 36, 40, 50-51, 55, 57-62, 66, 69-71, 73-76, 78-82, 84, 85, 87 , 91 and 93-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman (US 2580773) in view of Eckles (US 5405523) and EITHER Gundel et al (US 2892760) OR Hildering et al (US 3960677).

Claims 28, 36, 40, 60: Heiman teaches a process for depositing zinc or a zinc alloy protective coating on aluminum or aluminum based alloy substrates. column 1, lines 1-20, column 2, lines 30-40 and column 6, lines 60-75. Heiman teaches immersing an aluminum or aluminum based alloy substrate in an aqueous acidic immersion plating solution. Column 2, lines 30-50 and column 3, line 45 through column 4, line 5 (the amount of acid added would make the bath acidic). The bath can contain zinc ions and fluoride ions. Column 3, lines 45-50. The bath can also contain nickel and/or cobalt ions. Column 2, lines 30-40 and column 6, lines 60-75. The solution can be free of cyanide ions, as no cyanide is described of being present. See column 3, lines 45-60 and column 6, lines 60-75. The substrate is immersed in the bath for a period of time to deposit the desired coating. Column 5, lines 50-60. Then the coated substrate is removed from the immersion plating. Column 5, lines 50-60. The bath can be used to perform immersion plating without electroplating or it can be used to perform electroplating. Column 3, lines 45-60, column 4, lines 15-20, and column 6, lines 70-75 (the bath can be used with or without current). The HF acid can be present in the solution in an amount of from 0.2 N to 2.5 N (1.0 N = 35.0 ml/l of HF of 48% acid). Column 3 line 65 through column 4, line 10.

Claim 40: after the substrate is plated with the zinc material, other materials can be electrodeposited on the plated substrate. Column 7, lines 20-30.

Claim 51, 69, 76, 85: the solution can contain other metal ions, including iron or manganese. Column 2, lines 35-40.

Claim 59, 70, 74, 84: the solution can be free of aliphatic amines and aliphatic hyroxylamines, as none is described as being present. See column 3, lines 45-60 and column 6, lines 60-75.

Claims 94-97: water soluble salts of the metals are used. Column 2, lines 45-50.

Heiman teaches all the features of these claims except (1) the pH of the solution, (2) the presence of the inhibitor, (3) the precise amounts of each material in the bath (claims 36, 57, 58, 60, 78, 79, 91, 87), (4) the presence of complexing agents (claim 50, 61, 62, 71), (5) the inhibitor material as a mercapto substituted nitrogen containing heterocylic compound, such as thiazole, (6) the use of acetates to make the water soluble salts of nickel, cobalt and zinc (claims 94-97).

However, Eckles teaches a method for depositing a zinc alloy protective coating on metal substrates. Column 1, lines 45-55. The method is by electroplating. Column 1, lines 45-55. The method includes immersing a metal substrate in an aqueous acid plating solution having a pH of from about 3.5 to about 6.2. Column 2, lines 40-46. The bath can comprise zinc ions, and nickel and/or cobalt ions. Column 2, lines 25-30 and column 4, lines 10-20. The bath also contains an "inhibitor" material containing nitrogen and/or sulfur atoms (the brightener). Column 2, line 46 through column 3, line

8. The substrate is immersed for a period of time sufficient to deposit the coating. column 6, lines 40-45. The substrate is removed from the bath, because the substrate must inherently be removed from the bath for use. The solution can be free of cyanide. Column 6, lines 25-40. The solution can contain 4--50 g/l of zinc ions. Column 4, lines 45-50. The solution can contain about 0.02--20 g/l alloying ions, such as nickel and/or cobalt. Column 4, lines 53-68. The solution can contain about 0.05—2 g/l of the nitrogen containing compound. Column 4, lines 5-10. The solution can contain acetate (one of applicant's claimed complexing agents). Column 4, lines 36-38. The nitrogen containing material can be a nitrogen containing heterocyclic compound. Column 2, lines 60-65. Eckles provides that known soluble salts of zinc for acidic baths include acetate forms. Column 4, lines 35-45. Eckles also provides that known soluble salts for nickel and cobalt include acetate forms. Column 4, lines 10-20 and 50-56.

Gundel teaches that it is desirable to use water soluble organic brightening agents in metal electroplating processes, such as zinc electroplating. Column 3, lines 35-45. The bath used can be an acid bath. Column 3, lines 65-75. The brightener can be a mercapto substituted nitrogen containing heterocylic compound in the form of a thiazole, such as a 2-mercapto-benzothiazole material, including 2-mercapto-benzothiazole-S-ethanol sodium sulfate. Column 3, lines 10-35. The amount of brightening agent provided can be 0.01 to 20 g/l. Column 3, lines 50-60.

Hildering teaches that it is desirable to use a heterocylic brightener in an acid zinc electroplating bath. Column 1, lines 5-10 and 45-50. The brightener can be a

mercapto substituted nitrogen containing heterocylic compound in the form of a thiazole, such as 2-mercapto benzothiazole. Column 4, lines 5-10 and column 5, lines 1-10 (number (9)). The amount of brightener can be 0.1 to 10 g/l. Column 5, lines 25-30. Various conventional acid zinc solutions can be used. Column 5, lines 45-50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman to use the pH taught by Eckles in the bath with an expectation of desirable coating results, because Heiman teaches to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating and that the acid in the bath can be 0.2 to 5 N, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating the desirable pH is 3.5 to 6.2. One of ordinary skill in the art would optimize within that range to find the most desirable pH for the particular use desired. It would further have been obvious to modify Heiman to use zinc acetate, nickel acetate and/or cobalt acetate to provide the metal salts for the bath as suggested by Eckles in order to provide desirable metal salts, because Heiman teaches to use soluble metal salts for forming the acid bath, and Eckles teaches that soluble salts of metals for acid baths include zinc acetate, nickel acetate and cobalt acetate. It would further have been obvious to modify Heiman to provide the brightener (inhibitor) material and complexing material in the bath as suggested by Eckles with an expectation of desirably bright coated material, because Heiman teaches to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating it is desirable to

provide a brightener and complexing material to provide a desirable appearance to the coating, and this desire for a bright appearance would be present for electroplating or immersion plating.. It would further have been obvious to optimize the ranges of material taught by Heiman in view of Eckles to provide the optimum amounts of materials for the precise purpose of the article to be coated, because both references teach desirable ranges of amounts of materials to be used in the bath and to provide the optimum for the purpose being used. It would further have been further have been obvious to modify Heiman in view of Eckles to further use a known brightener for acid zinc electroplating baths, such as a mercapto substituted nitrogen containing heterocylic compound, as taught by EITHER Gundel OR Hildering in order to provide a desirably bright coating, because Heiman in view of Eckles suggests a zinc plating process with brightener as used for zinc electroplating whether the plating process is immersion or electrolytic and both Gundel and Hildering teaches conventionally known brightening agents for zinc electroplating are conventionally known to be mercapto substituted nitrogen containing heterocylic compound, such as thiazoles that contain 2-mercapto-benaothiazoles. Both Gundel and Hildering also teach that the amount of the brightening agent used overlaps with the amount claimed by applicant for the mercapto substituted nitrogen containing heterocylic compound, and it would have been obvious to one of ordinary skill in the art to optimize the amount used from the taught ranges. As the mercapto substituted nitrogen containing heterocylic compound used as a

brightener and the amounts used overlap with what is claimed by applicant as an "inhibitor", the brightener reads on the "inhibitor" as claimed.

5. Claims 29-31, 37-39, 41-42, 77 and 88-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman in view of Eckles and EITHER Gundel OR Hildering as applied to claims 28, 36, 40, 50-51, 55, 57-62, 66, 69-71, 73-76, 78-82, 84, 85, 87 , 91 and 93 above, and further in view of Haydu et al (US 5182006).

Heiman in view of Eckles and EITHER Gundel OR Hildering teaches all the features of these claims except the precise cleaning process. Heiman teaches that prior to coating the article is first thoroughly degreased and cleaned so as to remove any grease, dirt or other undesirable foreign materials on the surface. Column 3, lines 5-10. The surface is also treated prior to coating with acid. Column 3, lines 15-25. Cleaning can be perfomed with an alkaline cleaner. Column 3, lines 40-45. After cleaning the article can be water rinsed. Column 3, lines 20-27.

Haydu teaches that it is conventional to prepare aluminum substrates for zincating by alkaline cleaning followed by a cold water rinse, then etching followed by a water rise, then desmutting followed by a rinse, and then zincate coating by an immersion zinc bath. Column 2, lines 5-20. Haydu also teaches that the zinc coating bath also functions as an etching solution. Column 32, lines 25-30. It is also known follow the first zincate coating with a second zincate coating. Column 2, lines 30-40.

Cleaning can be done with an alkaline cleaner. Column 4, lines 1-10. Etching can be done with an acid etchant. Column 4, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman in view of Eckles and EITHER Gundel OR Hildering to use the full cleaning process taught by Haydu in order to provide a fully prepared substrate for coating because Heiman in view of Eckles and EITHER Gundel OR Hildering teaches a zincate plating process and Haydu teaches a cleaning process to fully prepare a substrate for zinc plating. The rinsing of the immersion plated article would be suggested as further treatment is to be provided.

6. Claims 28-31, 36-42, 50-51, 55, 57-62, 66, 69-71, 73-82, 84, 85, 87-91 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 2000-256864 (hereinafter '864) in view of Haydu et al (US 5182006) and EITHER Gundel et al (US 2892760) OR Hildering et al (US 3960677).

Claims 28, 36, 40, 60: '864 teaches a process for depositing zinc or a zinc alloy protective coating on aluminum or aluminum based alloy substrates. Abstract and paragraphs [005] – [0007] (note iron, nickel, copper, etc. can be used with the zinc). '864 teaches immersing an aluminum or aluminum based alloy substrate in an aqueous acidic immersion plating solution. Abstract and paragraph [0006]. The pH can be between 1 and 5, such as 4. Abstract, paragraph [0006], and paragraph [0034] (Table 1, example 6). The bath can contain zinc ions and fluoride ions. Abstract and paragraphs

[0012]—[0013]. The bath can also contain nickel and/or cobalt ions. Paragraphs [0007] and [0016]. The solution can be free of cyanide ions, as no cyanide is described of being present. See paragraphs [0005]—[0019]. The substrate is immersed in the bath for a period of time to deposit the desired coating. Paragraph [0009]. Then the coated substrate is removed from the immersion plating. Paragraph [0009] (as it is only immersed for a certain amount of time). The amount of zinc ions can be 1-50 g/L. Paragraph [0012]. The amount of nickel and/or cobalt ions can be an amount greater than 0.0001 g/L. Paragraph [0016]. The amount of fluoride ions can be 0.1 to 20 g/L. Paragraph [0014].

Claims 29-31, 37-39, 41-42, 77, 88, 89, 90: before treatment, cleaning and alkali etching can be performed. Paragraph [0031].

Claim 40: after the substrate is plated with the zinc material, other materials can be electrodeposited on the plated substrate. Paragraph [0028].

Claims 50, 61, 62, 71, 75, 80, 93: complexing agents as defined in claim 62 can be present in the plating solution. Paragraph [0017]. The amount of complexing agent can be 1-50 g/L. Paragraph [0017].

Claim 51, 69, 76, 85: the solution can contain other metal ions, including iron or copper. Paragraph [0016].

Claim 57, 78: The amount of zinc ions can be 1-50 g/L. Paragraph [0012]. The amount of nickel and/or cobalt ions can be an amount greater than 0.0001 g/L. Paragraph [0016].

Claim 59, 70, 74, 84: the solution can be free of aliphatic amines and aliphatic hyroxylamines, as none is described as being present. Paragraphs [0005]—[0019].

Claim 68, 86, 92: the plating solution can have a pH of 4, for example. Abstract, paragraph [0006], and paragraph [0034] (Table 1, example 6).

Claim 87, 91: The amount of fluoride ions can be 0.1 to 20 g/L. Paragraph [0014].

'864 teaches all the features of these claims except (1) the presence of the inhibitor, (2) the precise amounts of each material in the bath (claims 36, 57, 58, 60, 78, 79, 91, 87), (3) the precise cleaning process (claim 29-31, 37-39, 41-42, 77, 88-90), (4) the precise inhibitor material as a mercapto substituted nitrogen containing heterocylic compound, such as thiazole, (5) the precise range of pH.

Haydu teaches that it is conventional to prepare aluminum substrates for zincating (zinc immersion plating) by alkaline cleaning followed by a cold water rinse, then etching followed by a water rise, then desmutting followed by a rinse, and then zincate coating by an immersion zinc bath. Column 2, lines 5-20. Haydu also teaches that the zinc coating bath also functions as an etching solution. Column 32, lines 25-30. It is also known follow the first zincate coating with a second zincate coating. Column 2, lines 30-40. Cleaning can be done with an alkaline cleaner. Column 4, lines 1-10. Etching can be done with an acid or alkaline etchant. Column 4, lines 10-20. Haydu further teaches that when performing the zincate plating, it is desirable to use an additive that is a nitrogen containing heterocylic compound, which is a known brightener additive for zinc electroplating solutions. Column 2, line 60 through column

3, line 35. The amount added of the additive is 0.1 to 5 % by volume. Column 3, lines 40-45. The use of the additive improves the smoothness and brightness of a later electroplated nickel overcoating. Column 7, lines 1-10. The use of additive also provides for a thinner applied zinc coating applied than without the additive. Column 7, lines 10-25. This indicates that the material acts as an "inhibitor" limiting the amount of coating applied.

Gundel teaches that it is desirable to use water soluble organic brightening agents in metal electroplating processes, such as zinc electroplating. Column 3, lines 35-45. The bath used can be an acid bath. Column 3, lines 65-75. The brightener can be a mercapto substituted nitrogen containing heterocylic compound in the form of a thiazole, such as a 2-mercapto-benzothiazole material, including 2-mercapto-benzothiazole-S-ethanol sodium sulfate. Column 3, lines 10-35. The amount of brightening agent provided can be 0.01 to 20 g/l. Column 3, lines 50-60.

Hildering teaches that it is desirable to use a heterocylic brightener in an acid zinc electroplating bath. Column 1, lines 5-10 and 45-50. The brightener can be a mercapto substituted nitrogen containing heterocylic compound in the form of a thiazole, such as 2-mercapto benzothiazole. Column 4, lines 5-10 and column 5, lines 1-10 (number (9)). The amount of brightener can be 0.1 to 10 g/l. Column 5, lines 25-30. Various conventional acid zinc solutions can be used. Column 5, lines 45-50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '864 to optimize the pH from the range taught by '864 (1-

5), in order to provide the optimum pH for coating because in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). It would further have been obvious to modify '864 to use the full cleaning process taught by Haydu in order to provide a fully prepared substrate for coating because '864 teaches a zincate immersion plating process and Haydu teaches a cleaning process to fully prepare a substrate for immersion zinc plating. The rinsing of the immersion plated article would be suggested as further treatment is to be provided. It would further have been obvious to modify '864 to use the brightener (inhibitor) additive material suggested by Haydu in the bath of '864 with an expectation of desirably smoothed, thin and brightened resulting coated article, as '864 teaches a zincate plating system with various additives and Haydu teaches that it is further desirable to use a brightener additive of a nitrogen containing heterocylic compound known to be used in zinc electroplating to provide a desirable thinned and brightened resultant coating. It further would have been obvious to modify '864 in view of Haydu to optimize within the ranges given of the various amounts of materials to find the optimum amounts of metal, fluoride and inhibitor materials as in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed.Cir. 1990). As well "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05. It would further have been further have been obvious to modify '864 in view of Haydu to further use a known brightener for acid zinc electroplating baths, such as a mercapto substituted nitrogen containing heterocylic compound, as taught by EITHER Gundel OR Hildering in order to provide a desirably bright coating, because '864 in view of Haydu suggests a zinc plating process with brightener as used for zinc electroplating when the plating process is immersion and both Gundel and Hildering teaches conventionally known brightening agents for zinc electroplating are conventionally known to be mercapto substituted nitrogen containing heterocylic compound, such as thiazoles that contain 2-mercapto-benaothiazoles. Both Gundel and Hildering also teach that the amount of the brightening agent used overlaps with the amount claimed by applicant for the mercapto substituted nitrogen containing heterocylic compound, and it would have been obvious to one of ordinary skill in the art to optimize the amount used from the taught ranges. As the mercapto substituted nitrogen containing heterocylic compound used as a brightener and the amounts used overlap with what is claimed by applicant as an "inhibitor", the brightener reads on the "inhibitor" as claimed.

7. Claims 94-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over '864 in view of Haydu and EITHER Gundel OR Hildering as applied to claims 28-31, 36-42,

50-51, 55, 57-62, 66, 69-71, 73-82, 84, 85, 87-91 and 93 above, and further in view of Eckles et al (US 5405523).

'864 in view of Haydu and EITHER Gundel OR Hildering teaches all the features of these claims except the use of acetate. '864 teaches the use of water soluble zinc compounds. Paragraph [0012]. '864 also teaches the use of water soluble salts of nickel. paragraph [0016].

Eckles teaches that known water soluble metal ions that can be provided in coating baths include nickel in acetate form. Column 4, lines 10-20 and 50-56. Zinc ions can also be added to an acid bath in the form of the soluble zinc acetate. Column 4, lines 35-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '864 in view of Haydu and EITHER Gundel OR Hildering to use zinc acetate and nickel acetate as the water soluble zinc or nickel compounds in order to provide a desirable coating bath as '864 teaches to use soluble compounds and Eckles teaches that conventional soluble compounds of zinc and nickel to use in coating baths includes acetate forms.

8. Takami et al (US 6162343) notes that a conventional water soluble compound for immersion zincate solutions include zinc acetate. Column 2, lines 10-20.

Response to Arguments

9. Applicant's arguments filed October 9, 2007 have been fully considered but they are not persuasive.

Applicant has argued based on the declaration of Dr. Joshi filed October 9, 2007. The Examiner has reviewed the arguments and the declaration, however, the rejection is maintained. At paragraph (5) of the declaration Dr. Joshi argues that the presently claimed invention would not be obvious, referring to the "following" (the provided experimental results) as providing support for this. Paragraphs (6)-(10) provides the details of the experiments and the test results. Paragraphs (11)-(18) provide conclusions based on these test results. The Examiner has reviewed all this material, however, the experiments do not support a showing of unexpected benefits as described by Dr. Joshi in paragraph (7). As discussed in MPEP 716.02 (d), "Whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. In re Clemens, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980)." On point would be the citation to In re Peterson, 315 F.3d 1325, 1329-31, 65 USPQ2d 1379, 1382-85 (Fed. Cir. 2003) (data showing improved alloy strength with the addition of 2% rhenium did not evidence unexpected results for the entire claimed range of about 1-3% rhenium) in MPEP 716.02(d). Applicant has shown a single point within the claimed ranges (note the varying scope of the independent claims, at the least, each independent

claim has a range of pH's, and others have ranges of materials) and compared it to specific points well outside of the claimed ranges of materials. There is no showing that the benefits for the single point apply to the entire range claimed or are unexpectedly beneficial compared to pints near the range. See, on point, the citation to In re Lindner, 457 F.2d 506, 509, 173 USPQ 356, 359 (CCPA 1972) (Evidence of nonobviousness consisted of comparing a single composition within the broad scope of the claims with the prior art. The court did not find the evidence sufficient to rebut the prima facie case of obviousness because there was "no adequate basis for reasonably concluding that the great number and variety of compositions included in the claims would behave in the same manner as the tested composition.") in MPEP 716.02(d).

In paragraphs (9) and (12) of the declaration, as to the electroplating results, it is argued that the poor electroplating results from the composition shows that the immersion plating solutions would not be expected to perform well in electroplating, and that brighteners or any other component for an electroplating solution are not readily exchangeable for use in immersion plating. Further, in paragraph (11) it is argued that it is clear that the selection of a chemical composition for use as a zincate replacement is not a simple matter of selecting any superficially similar prior art composition and arbitrarily modifying it. The Examiner, however, has not taken the position that one would randomly replace materials, rather that in the rejection using Heiman as the primary reference, that Heiman specifically teaches to provide using the same materials for both immersion and electrolytic plating, and because of that one

expect to use a brightener that can be used for electrolytic plating (as taught by Eckles) in an immersion bath as well. In the rejection using '864 as the primary reference, the Examiner has provided Haydu as specifically teaching the usage of a known electrolytic plating brightener in an immersion coating bath. In both cases, therefore, materials are not randomly combined. The Examiner has not taken the position that the specific immersion plating bath formed would then also be used for electroplating. This also applies as to applicant's arguments with regard to paragraph (14). As to the specific requirement for the particular ranges of materials, as discussed above, the Examiner notes that a showing of unexpected benefits for the claimed scope and range of the invention has not be made.

In paragraph (13) it is argued that the test results show that the chemical compositions of the prior art, even when modified and combined as contended by the Examiner, totally fail to function as a zincate replacement process. The Examiner disagrees with applicant's position, because the comparative results do not fully cover when the Examiner contends. For example, '864 teaches a pH range of 1-5, which would be inclusive of 4.5-5, within applicant's claimed range. However, the test results using '864 uses a pH of approximately 3. As previously discussed above, selection of a single point within the broad range of the prior art would not demonstrate non-obviousness of the entire range suggested by the prior art, and applicant has not shown unexpected benefits for the scope of his entire claimed range.

In paragraph (15) it is argued that the results of the experiments show that a prima facie case of obviousness has not been made. The Examiner disagrees for the reasons stated in the paragraphs above as to the problems with the tests as compared to what is claimed.

In paragraph (16), applicant argues that the initial combination of Heiman and Eckles would have failed, and thus one would not have looked further. The Examiner disagrees. Heiman and Eckles teach ranges of amounts and varieties of materials to be potentially used, and, as noted in Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."), one would perform routine experimentation to optimize and discover the best ranges, etc, and thus would not perform one single random experiment to see materials from the potential varieties and ranges can be combined successfully. Therefore, the example of combination given is simply not enough to determine that the references cannot be successfully combined. In paragraph (17) applicant argues the same for the initial combination of '864 and Hadu, and the Examiner disagrees for the same reasons as discussed as to Heiman and Eckles earlier in this paragraph.

In paragraph (18), applicant argues that one of ordinary skill in the art would not have found it obvious to use a brightener disclosed only for use in an electroplating bath, and had such a brightener been added to the baths of the prior art references cited

by the Examiner no good result would have been obtained. The Examiner disagrees for the reasons stated above as to the use of the specific brightener as suggested by the references and further, because as discussed above, applicant has not shown that no good result would have been obtained for the scope of what the prior art references teach.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KATHERINE BAREFORD
PRIMARY EXAMINER